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THE LAND SNAILS OF NEW ENGLAND.

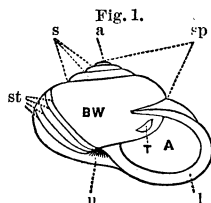
BY EDWARD S. MORSE.

(Continued from page 16.)

We commence the specific description of the Land Snails of New England with a group of the larger forms, of which *Helix albolabris* offers a fair example. It would be more natural to present first a chapter on the classification of the animals to be considered, but we think it better that our readers should first become acquainted with the forms to be classified, that they may the better understand and appreciate the principles upon which the species are grouped into genera and families. In fact, more or less familiarity must be acquired on the general and special history of any group of animals before one can clearly comprehend its classification.

It would be proper that the slugs, or those snails without external shells, should first engage our attention; owing however to the want of sufficient material for accurate figures, we prefer waiting till the spring opens, and an opportunity is afforded to examine fresh specimens, before presenting a chapter on this group. In order that the descriptions of the following species may be understood, we present an explanation of the various terms used in describing shells (see fig. 1). The explanation of the soft parts of the animal was given in the first number.

Spire, sp., includes the twists, or whorls of the shell, excepting the last or outside whorl, which is called the *body whorl*, BW. The spire is said to be *elevated*, when the apex and whorls rise above the body whorl, and *depressed* when the whorls do not rise above each other.



Apex, a, is the beginning of the spire, or the part first formed.

Base, is that region of the shell opposite the apex. A shell rests on its base, when the apex is uppermost.

Suture, s, is the seam, or line of division between the whorls.

Umbilicus, u, is a cavity left in the central axis of the shell, around which the whorls revolve. The umbilicus is seen from the base of the shell. The umbilicus is said to be *open* when a distinct perforation appears in the base of the shell; *closed*, when a portion of the lip extends over it, (as in the adult condition of the shells of many species), and *absent*, when the whorls revolve so closely as to leave no central space.

Lip, l, is the border of the aperture. When the edge of the aperture is sharp, the lip is said to be simple. When produced into a flange, it is called a reflected lip.

The *columella* is that portion of the aperture nearest the centre of the shell.

Striæ, st, or lines of growth, are minute lines, running parallel with the border of the aperture, and indicate the successive enlargements of the shell.

Nearly all shells have an outer coating of animal matter, called the epidermis. After the death of the animal this coating soon loses its color, and wears away, leaving the shell faded and bleached.

HELIX ALBOLABRIS Say. The general description of this species given in our first number need not be repeated here. Described first by Thomas Say, one of the earliest naturalists of America, it has always been a standard species, quickly recognized by its beautiful russet-colored shell, and the broad white lip bordering the aperture. The animal is variable in color, though generally light-

brown, or greyish. The granulated markings on the body are very distinct. The shell is uniformly light yellowish or russet brown; having from five to six whorls. The aperture is bordered by a broad white lip in adult specimens; the lower portion of the lip extending over the umbilicus. Fig. 2 represents the shell before it has attained its complete growth; the umbilicus is open, and the lip is sharp. The presence of a reflected lip, in those species which have it, always indicates maturity.

Fig. 2.



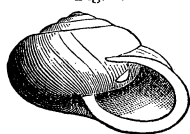
The ordinary diameter of the shell is one inch, though it sometimes attains a larger size.

This species occurs throughout the United States, with the exception of the Pacific coast and the extreme Southern States. They are found in well wooded districts of oak, maple and beech, and oftentimes occur in great numbers on islands. They can be easily kept in confinement, and the shells of those raised in this manner are much more symmetrical and delicate, than those found wild. In order to raise them, it is only necessary to procure a wooden box, or better, a deep earthen bowl, and after filling to the depth of two inches with damp earth from the woods, place a few bits of bark for the snails to lurk under. It is well to imitate as nearly as possible the condition of their native haunts. As the earth becomes dry, moisten with a sprinkling of water, bathing the snails at the same time. They may be fed on flour or meal mixed with water, and occasionally a tender leaf of cabbage or lettuce, of which they are very fond. The young can be easily raised from the egg by observing the above conditions. The eggs, from thirty to fifty in number, are laid in early spring, and hatch in the space of three or four weeks. The snail when first hatched from the egg,

is quite unlike its parent. They attain their complete growth, in from two to three years.

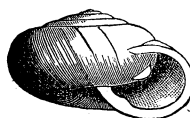
HELIX THYROIDES Say. (Fig. 3). The shell of this species resembles very much that of *Helix albolabris*, but differs in being smaller, slightly more globose, and in having its umbilicus only partly covered. The chief point of difference lies in the prominent tooth-like process on the inner lip. The shell is yellowish horn color; whorls five, finely striated with lines of growth; aperture bordered by a broad white lip; inner lip furnished with a white tooth; umbilicus only partly closed; diameter three-fourths of an inch. Dr. Gould says that, though by no means common, this shell occurs in nearly all parts of Massachusetts. It must be considered a rare shell in New England, though it is a very common species in New York, the Western and some of the Southern States.

Fig. 3.



HELIX SAYII Binney. (Figs. 4, 5). This species was

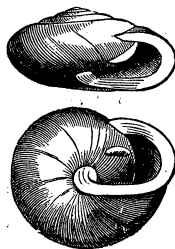
Figs. 4. 5.



named by Dr. Amos Binney, in honor of Thomas Say. The shell is depressed and thin; color shining russet; whorls five, or six; aperture rounded, bordered by a narrow white lip, with a slight projecting tooth near the umbilicus. There is also a prominent white tooth on the inner lip; umbilicus open, allowing all the volutions to be seen; diameter nearly one inch. The animal is light reddish brown, with the tentacles darker. This species, though generally distributed throughout the northern portion of the United States, is by no means common in New England. It has been found in Vermont, New Hampshire,

and several places in Maine. It seems to prefer mountain slopes and hill sides. We have picked up the empty shell in numbers, on hill sides that had recently been burnt over, and the collector will often find clearings of this nature, that is where a light hardwood growth has been recently burnt, a good collecting ground for the larger *Helices*, as the leaves under which they hide become burnt, and the snails are thus exposed, oftentimes uninjured. We extract the following from Binney's Monograph of the Land Snails of the United States, p. 181: "On the third day of July, 1836, I discovered an individual of this species in the act of laying its eggs, in a damp place under a log. I transferred them, with the animal, to a tin box filled with wet moss. The eggs were not much more than half as large as those of *H. albolabris* Say; they were white, adhering together very slightly, flaccid, and apparently not entirely filled with fluid. During the succeeding night the number had increased to about fifty, and in a few hours they became full and distended. As the Snail now began to devour the eggs, I was obliged to remove it. On the twenty-ninth of July, all the eggs were hatched: the young snails had one whorl and a half; the umbilicus was open; the head and tentacles were bluish-black, and the other parts whitish and semi-transparent. They immediately began to feed, and made their first repast of the pellicles of the eggs from which they had just emerged. They grew rapidly, and before the middle of October, when they went into winter quarters, they had increased their bulk four or five times, beyond their original measurement."

Figs. 6, 7.



HELIX DENTIFERA Binney. (Figs. 6, 7).
Shell with spire flattened, convex below,

whorls five, with delicate oblique striæ; the aperture is flattened towards the plane of the base. The lip is broad and white, inner lip having a prominent tooth; diameter three-fourths of an inch. The animal is grayish on the sides, with the back darker. This species may justly be considered rare, as wherever it occurs, it is generally found sparingly. Dr. Binney found it on the eastern slopes of the Green Mountains. They were at one time numerous in the town of Stratford, Vermont. Four specimens only have been found in Maine, and these were discovered either on the slopes or summits of mountains. It has never been collected in Massachusetts to our knowledge. It occurs in Ohio, New York and Pennsylvania.

It will be hardly necessary for me to state, that the descriptions already given, and those which are to follow, are mainly intended for those who are forming, or wish to form collections in this pleasing branch of Natural History. To such we feel that no apology is needed for the necessary dryness of specific descriptions, and we know that the figures will be acceptable, as the works in which these species are illustrated are rare and expensive, and many of them have not heretofore been given with any approach to accuracy. We hope that no little interest may be excited in those not directly interested in the subject, as illustrating a group of animals but little known to general readers, and affording them some conception of what may be found under the dead leaves, and rotten bark, crushed beneath the feet while rambling in the woods and fields.—*To be continued.*